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WILDLIFE REVIEW

AN ABSTRACTING SERVICE FOR WILDLIFE MANAGEMENT
ISSUED FOR THE INFORMATION OF COOPERATORS
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UNITED STATES DEPARTMENT OF THE INTERIOR

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Except as indicated, abstracts are by Neil Hotchkiss, editor.

K.M.

WILDLIFE (GENERAL)--BEHAVIOR

BURT, WILLIAM H. Territoriality. Journal of Mammalogy 30(1): 25-27. February 1949.

"From the practical point of view, that of the wildlife manager, it is extremely important to know whether individuals of a species display territorial behavior."

FOX, H. MUNRO. The personality of animals. First American Pelican Books edition (revised). 116 pages, illus. Penguin Books, Inc., 245 Fifth Ave., New York 16. April 1947. 25¢.

NOBLE, RUTH CROSBY. The nature of the beast: a popular account of animal psychology from the point of view of a naturalist. 224 pages, illus. Doubleday & Co., Inc., Garden City, N. Y. 1946. $2.75.

WILDLIFE (GENERAL)--COMMUNITIES & HABITATS
(See also WILDLIFE (GENERAL)--MANAGEMENT, Sanborn)

DALBACH, CHARLES ARTHUR. A study of the ecology and economic value of crop field borders. 205 pages, illus. Graduate School Studies, Biological Science Series No. 2. The Ohio State University Press, Columbus. 1948. $3.50.

Fencerows are one of the most important farm wildlife habitats in the Midwest. A major problem ".....is that plant and animal pests inimical to crop production might be fostered by field border vegetation favorable to farm game species." In a 3-year study in Montgomery Co., southwestern Ohio the author undertook the task of treating this subject in its entirety. His report describes crop field borders and discusses their relation to farm management; describes the insect population in the borders and in the litter; and describes the bird and small mammal populations in relation to insect pests and as pests, themselves. He found that the use of woody field border vegetation involved less pest risk to grain and forage crops than did the use of herbaceous vegetation.

WILDLIFE (GENERAL)--DISEASES

HERMAN, CARLTON M. and ROSEN, MERTON N. Disease investigations on mammals and birds by the California Division of Fish and Game. California Fish and Game 35(3): 193-201, illus. July 1949.

A review of 40 years' work. The State's present intensive program started in July 1942. It includes studies of quail parasites, fowl cholera, diseases and parasites of deer, the blood picture of deer, pullorum disease, and avian type tuberculosis. "One of the chief projects of the laboratory staff is the collection of survey data to determine what parasites and diseases occur in our wildlife, the incidence, prevalence and distribution of these infections in the wild and their relative importance." The authors describe a very useful mobile laboratory. They list 50 publications.

WILDLIFE (GENERAL)--DISEASES--Continued

SHAW, J. N. Some parasites of Oregon wild life. Oregon Agricultural Experiment Station, Technical Bulletin 11. 16 pages, illus. 1947.
A list of parasites of Oregon fish, wild birds, deer, and miscellaneous wild animals that were collected during the years from 1925 to 1946. There are short notes of interest on 20 parasites.--M. A. Slattery.

WILDLIFE (GENERAL)--FAUNAS & MANUALS

DUFRESNE, FRANK. Alaska's animals & fishes. 297 pages, illus. A. S. Barnes and Co., New York. 1946. $5.00.
An entertaining account of the Alaskan scene and of Alaska's mammals and fishes. It is enlivened by the authors experiences and by Bob Hines beautiful drawings and paintings.

WILDLIFE (GENERAL)--MANAGEMENT
(See also WILDLIFE (GENERAL)--COMMUNITIES & HABITATS, Dambach)

ATKESON, THOMAS Z. Wheeler, a national wildlife refuge. 14 pages, illus. U. S. D. I., Fish and Wildlife Service, Conservation in Action No. 7. 1949. 15¢ from Government Printing Office.
This bulletin reviews the early and recent history of the land on which this northern Alabama refuge was established in 1938. When Wheeler Reservoir is full, more than half of the 38,000-acre area is under water. In winter the refuge harbors a steadily increasing number of ducks and geese. There is very little natural food, so planting of grain and green browse crops is an important part of management. Protection is another. The presence of the refuge has improved local hunting and trapping.

DAY, ALBERT M. Fish and Wildlife Service. Reprinted from the "Annual Report of the Secretary of the Interior for the Fiscal Year Ended June 30, 1948." Pages 285-315. 1948.
The principal subjects reported upon are marine fishery research, Alaska fisheries, salmon conservation, fish utilization, maintaining inland fisheries, cooperation with American republics, rehabilitation of Philippine fisheries, proposed treaties, polar expeditions, whaling, status of waterfowl, wildlife research, river basin development, refuges, Federal aid in wildlife restoration, control of predators and rodents, and wildlife protection.

DENNIS, JOHN V. A wildlife sanctuary for everyone. Part I. Urban and suburban wildlife sanctuaries. The Bulletin of the Massachusetts Audubon Society 33(3): 93-96, illus. April 1949.
"The progress of wildlife conservation in Massachusetts should be of immense interest to people all over the country, for Massachusetts, being one of the first States to be settled, and at present having one of the greatest densities in population, affords a glimpse of what the future holds for wildlife in younger and less densely settled States." The author gives examples of what is being done in Massachusetts' many home and community sanctuaries. He outlines the conditions needed for good wildlife sanctuaries. See Part II by Alvah W. Sanborn and Part III by Edwin A. Mason.

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WILDLIFE (GENERAL)--MANAGEMENT--Continued

GRAHAM, EDWARD H. and VAN DERSAL, WILLIAM R. Wildlife for America: the story of wildlife conservation. 110 pages, illus. Oxford University Press, New York. 1949. $2.50.
This book contains about 50 one-page essays, each with 1 or 2 facing pictures. The subjects cover the history of wildlife in the United States, how it lives, what we have done and are doing to it, what it means to us.

LOYSTER, E. L. A plan for wildlife habitat improvement. Wisconsin Conservation Bulletin 14(5): 7-9, illus. May 1949.
Food and cover is being restored on farms through cooperation with the Soil Conservation Service.

MASON, EDWIN A. A wildlife sanctuary for everyone. Part III. Management on the home sanctuary. Bulletin of the Massachusetts Audubon Society 33(5): 185-188, illus. June 1949.
Tells how to grow food and cover, with emphasis on hedges. See Part I by John V. Dennis and Part II by Alvah W. Sanborn.

RUTHERFORD, ROBERT H. Ten years of Pittman-Robertson wildlife restoration. 128 pages, illus. Wildlife Management Institute, Investment Bldg., Washington 5, D. C. 1949.
This description of the Federal Aid to Wildlife Restoration Act tells how it works and what it accomplishes. It is operating in every state and in 4 territories. About 400 technically-trained people are employed on the projects. The mammals and birds that have benefited by the projects include about a dozen species, each, of big game and upland game birds; waterfowl; clapper rail; woodcock; rabbits and squirrels; raccoon; muskrat; beaver; marten; and several predators. Tables give figures on general financing, lands acquired, mammals and birds transplanted, species investigated (by states), and projects approved.

SANBORN, ALVAH W. A wildlife sanctuary for everyone. Part II. The effect of environment on wildlife populations. Bulletin of the Massachusetts Audubon Society 33(4): 147-150, illus. May 1949.
Following a discussion of the essentials of food, cover, water, and home site, the author describes the distribution of different birds in the wooded and open areas of Pleasant Valley Sanctuary in Lenox, Massachusetts. See Part I by John V. Dennis and Part III by Edwin A. Mason.

WILDLIFE (GENERAL)--MORPHOLOGY & PHYSIOLOGY

HARDIN, GARRETT. Biology: its human implications. 635 pages, illus. W. H. Freeman and Co., San Francisco. 1949. $5.00 (copied from The American Midland Naturalist for July 1949, page 255).
A review by Edward S. Castle indicates that this book is a successful introduction to knowledge of ourselves, the rest of the living world, the nature of life, and the interrelations of living things.

WILDLIFE (GENERAL)--MORTALITY

GEORGE, JOHN L. and STICKEL, WILLIAM H. Wildlife effects of DDT dust used for tick control on a Texas prairie. The American Midland Naturalist 42(1): 226-237. July 1949.

The effects of DDT on wildlife were studies in connection with experimental control of the Lone Star tick at Camp Bullis, Bexar Co., Texas, in the summer of 1947. A 10% DDT dust was applied to a 206.6-acre area consisting of about 70% ungrazed tall-grass prairie and 30% clumps of trees and shrubs. The average rate of application was 4.4 lbs. of DDT per acre, but deposition varied widely from place to place. A heavy rain fell near the end of the dusting and washed much DDT to the ground. Ground and bush feeding birds were severely affected by the treatment. Cardinals, lark sparrows, field sparrows, Bewick wrens, Carolina wrens, Kentucky warblers, yellow-breasted chats, blue grosbeaks, and painted buntings were nearly or entirely eliminated. Species less drastically reduced in numbers were yellow-billed cuckoo, black and white warbler, yellow-throated vireo, and white-eyed vireo. White-tailed deer were abundant, but showed no sign of DDT injury. Limited observations on other mammals did not demonstrate DDT damage. 4 rough green snakes and 1 spiny lizard were found dead in the DDT area. Mortality was probably high among insectivorous reptiles.--W. H. Stickel.

PALMER, E. LAURENCE. Wildfire. Cornell Rural School Leaflet 41(2): 3-32, illus. Fall 1947.

A vivid description of how forest and grass fires work, their effects, and how they may be prevented or stopped. The author emphasizes the destructiveness of wildfires to insects, fungi, wildlife, fish, humus, soil, water resources, and beauty; but he does not overlook possible good that may result where there is some control.

WILDLIFE (GENERAL)--POPULATIONS

CLARKE, C. H. D. Fluctuations in populations. Journal of Mammalogy 30(1): 21-25. February 1949.

A good review of observations and theories. The author emphasizes the need for much critical work.

DYMOND, J. R. Fluctuations in animal populations with special reference to those of Canada. Transactions of the Royal Society of Canada 41, Series 3 (Section 5): 1-34, illus. May 1947. 25¢ from Royal Ontario Museum of Zoology.

The author discusses periodic and non-periodic fluctuations and their causes. Some characteristics of periodic fluctuations in Canada are as follows: (1) There are variations in length of cycle within the same species and in time of peak in different parts of the country. (2) There is lack of uniformity in the length of the cycle in different species. (3) All of the animals are Arctic or boreal, and most of them are rodents or grouse-like birds. Study of animal populations, especially among fur animals and fishes, needs to be extended and improved.

WILDLIFE (GENERAL)--POPULATIONS--Continued

HAYNE, DON W. An examination of the strip census method for estimating animal populations. The Journal of Wildlife Management 13(2): 145-157, illus. April 1949.

The author suggests ".....that the population of each class of animal with regard to flushing distance be estimated separately, the sum of these several subpopulation estimates being the estimate of total population." "Two previously suggested sources of error, namely, the movement of animals out of the observer's path, and the failure of the observer to sight animals flushing to the right or left, are discussed as to type of field data to be expected."

WILDLIFE (GENERAL)--RESEARCH
(See also WILDLIFE (GENERAL)--MANAGEMENT, Rutherford)

GILBERT, PAUL T. Outdoor Nebraska--1948. Outdoor Nebraska 26(2 & 3): 1-48, illus. 1948.

This issue describes the activities of the State Game, Forestation and Parks Commission. It includes accounts of the different fish hatcheries and state parks and of game and fur research projects.

RAISZ, ERWIN. General cartography. 2nd edition. 354 pages, illus. McGraw-Hill Book Co., Inc., New York. 1948. $6.00.

A well-illustrated treatise on the history and use of maps and the techniques of map making. It has information on surveying on the ground and from the air and on many different kinds of maps and diagrams.

TRUE, RICHARD F. and HENDRICKSON, GEORGE O. Negative aerial photographs. The Journal of Wildlife Management 13(2): 227-228. April 1949.

Aerial photos ".....printed dimly, as rather diffused negative images,..... have proved useful as base maps for plotting dens, cover, and food in tagging study of the woodchuck." The authors tell how to make such prints.

MAMMALS (GENERAL)--BEHAVIOR
(See MAMMALS (GENERAL)--POPULATIONS, Hayne)

MAMMALS (GENERAL)--FAUNAS & MANUALS

MOORE, JOSEPH CURTIS. Putnam County and other Florida mammal notes. Journal of Mammalogy 30(1): 57-66. February 1949.

The author published in the Journal of Mammalogy for February 1946 a list of 31 native and 3 introduced mammals from Welaka, Putnam Co., Florida. The present article, dealing with 21 species, is based on further study from February 1946 to June 1947. It records 5 more forms from the same locality, together with information on habitat, breeding, and food (mostly of deer) from various localities.

MAMMALS (GENERAL)--FAUNAS & MANUALS--Continued

ODUM, EUGENE P. Small mammals of the Highlands (North Carolina) Plateau. Journal of Mammalogy 30(2): 179-192, illus. May 1949.

Most of the field work on which this article is based was done in June 1946, 1947, and 1948. The Plateau is an area of 75 square miles with an average elevation of more than 4000 feet, situated just northwest of the junction of Georgia, South Carolina, and North Carolina. The fauna is similar to that of the Great Smokies. There are notes on 35 species of mammals.

TAYLOR, WALTER P. and DAVIS, WILLIAM B. The mammals of Texas. Texas Game, Fish and Oyster Commission Bulletin No. 27. 79 pages, illus. August 1947.

The authors write briefly and interestingly of the nature of mammals, their protection under Texas laws, game preserves, and restoration and restocking. Most of the bulletin deals individually with about 130 native mammals and several common domestic ones (including man): description, distribution, biology, and ecology.

MAMMALS (GENERAL)--POPULATIONS

ALLEN, DURWARD L. The purposes of mammal population studies. Journal of Mammalogy 30(1): 18-21. February 1949.

They are needed in determining the reasonable harvest of game and fur, in developing management practices and measuring their results, in the study of disease ecology, in the study of predator-prey relationships, in pest control, in forest and range management.

HAYNE, DON W. Calculation of size of home range. Journal of Mammalogy 30(1): 1-18, illus. February 1949.

The author reviews the several methods that have been used in calculating size of home range and he outlines a method for locating the center of activity of a mammal. "The differing degree of intensity of use of the home range is a biologically significant aspect, and should not be neglected while attempting to determine absolute size." "The relationship between true home range and trap-revealed range is especially in need of experimental analysis."

HANVILLE, RICHARD H. Techniques for capture and marking of mammals. Journal of Mammalogy 30(1): 27-33. February 1949.

Many are described, reference being made to nearly 70 publications.

MAMMALS--BIG GAME (GENERAL)

ANONYMOUS. Big-game inventory of the United States, 1947. 3 pages, U.S.D.I., Fish and Wildlife Service, Wildlife Leaflet 321. May 1949. Free.

A table shows the numbers of big-game animals in each state. Another shows the kill in each state.

CULBREATH, JACK. Colorado's 1949 big game winter feeding by air. Colorado Conservation Comments 10(9): 7-8,30, illus. March 1949.

"One hundred and twenty tons of hay have been dropped to Colorado's game animals by over sixty air missions over mountainous Colorado, between January 19 and February 18. These operations fed some of the animals in almost every major herd area of the state." The author points out that this was not an attempt to provide full rations. He describes how this unsatisfactory diet was modified for mule deer.

MAMMALS--BIG GAME (DEER)

ALDOUS, SHALER E. Experimental planting of food and cover for deer. 9 pages, illus. U. S. D. I., Fish and Wildlife Service, Wildlife Leaflet 320. May 1949. Free.

In the Superior National Forest, Minnesota, a study covering several years led to the conclusions that (1) cover plantings of small nursery stock of white or black spruce may profitably be made in sparse deciduous tree and shrub stands; and (2) that planting of browse species is unnecessary and impractical in this region.

BENSON, SETH B. Decoying coyotes and deer. Journal of Mammalogy 29(4): 406-409. November 1948.

Experiences in calling does during the fawning season.

BLAIR, FRANK D. Deer management in Minnesota. Wisconsin Conservation Bulletin 14(4): 3-6. April 1949.

The State's program involves restoring and perpetuating the conditions which will insure more trees and more deer. Deer must not interfere with reforestation or agriculture. The population in the coniferous forest region is now low enough to permit the recovery of over-browsed areas. The best way to control populations is through hunting--if necessary, of any age or sex.

CHASE, GREENLEAF and SEVERINGHAUS, C. W. Winter deer feeding. 16 pages, illus. New York Conservation Department, Fish & Wildlife Information Bulletin No. 3. 1949.

In the winter of 1947-48 an emergency feeding program was carried on from late January to March. It consisted in cutting palatable hardwood browse at the edge of many deer yards and dropping from a plane nearly 5 tons of baled cedar browse at 1/8-mile intervals along the northerly banks of east-west streams in 5 major wintering areas. The browse cutting is expected to pay in the amount of sprout growth that follows; but--"Unless adequate harvesting of deer goes hand in hand with habitat improvement, emergency winter feeding of deer does little more than delay inevitable winter mortality."

CHEATUM, E. L. Bone marrow as an index of malnutrition in deer. New York State Conservationist 3(5): 19-22, illus. April-May 1949.

The appearance and composition of marrow in the middle third of the femur is a dependable index of malnutrition in carcasses found during spring surveys. This marrow is almost solid white fat in deer in top condition. The author shows, with colored figures, how the fat decreases and gelatinous texture and red color increase as animals are progressively undernourished.

DAHLBERG, B. L. Winter deer-range conditions, 1949. Wisconsin Conservation Bulletin 14(6): 21-24, illus. June 1949.

"An easy winter held down starvation losses. The resulting build-up, with most of our yards browsed out, promotes prospects of a spectacular crash." A map shows the location of the 238 yards checked in the winter of 1948-49. Two-thirds of the northern yards and half of the central Wisconsin yards were in poor condition.

MAMMALS--BIG GAME (DEER)--Continued

FABER, LESTER F. Deer survey, 1948. Iowa Conservationist 7(4): 30, illus. April 1948.

Herds were reported in 78 counties--a map shows their location. They totalled about 2000 animals.

INTERSTATE DEER HERD COMMITTEE. Interstate winter deer range management plan. California Fish and Game 35(2): 103-114, illus. April 1949.

This is a revision of the management plan first agreed upon in October 1947. It includes a history of this northern California-southern Oregon area, a description of the present situation, and a plan for action. Most of the winter range is south of Clear Lake, California. Its productive capacity will be determined; and its use by livestock and deer will be balanced with forage production.

INTERSTATE DEER HERD COMMITTEE. Third progress report on the cooperative study of the interstate deer herd and its range. California Fish and Game 35(2): 115-134, illus. April 1949.

This herd summers in southern Oregon and winters in northern California. The report deals mostly with the winter range. It discusses car strip census, state line track count, deer pellet group count, forage utilization check, tentative key area, and removal of deer by trapping.

MACE, R. U. 1948 deer and elk kills. Oregon State Game Commission Bulletin 4(5): 1,4-7, illus. May 1949.

The author tabulates by counties the details of the kills. He gives reasons for the regulations, and analyzes their results.

ROBINETTE, W. LESLIE. Winter mortality among mule deer in the Fishlake National Forest, Utah. 15 pages, illus. U. S. D. I., Fish and Wildlife Service, Special Scientific Report 65. April 1949.

The author studied mortality in this area from 1939 to 1945. The deer herd became very large during the 1930's; and in the hard winter of 1938-39 thousands of deer died from malnutrition. Since then the herd has been reduced by hunting to about two-thirds its former size. During the 5-year period, the winter loss averaged 10%. About 3 times as many fawns died as did either bucks or does.

SEVERINGHAUS, C. W. Tooth development and wear as criteria of age in white-tailed deer. The Journal of Wildlife Management 13(2): 195-216, illus. April 1949.

Since 1940, 127 age records were taken from 81 individual captive deer In addition, approximately 750 jaws were examined from deer found dead in the wild. The author describes and shows by photographs the changes in dentition from birth to old age. He recognizes 14 age classes in the development of permanent dentition, which is attained in less than 2 years.

SYLVESTER, WALTER R. The story of a Portage County deer yard. Wisconsin Conservation Bulletin 14(5): 13-16, illus. May 1949.

The author gives figures on deer and rabbit damage to forest reproduction in an area where some people think there aren't enough deer.

MAMMALS--BIG GAME (ELK)
(See MAMMALS--BIG GAME (DEER), Mace)

MAMMALS--BIG GAME (ANTELOPE)

UDY, JAY R. Antelope: the status of Utah's antelope. Utah Fish and Game Bulletin 8(4): 1-3. May 1949.

A project was begun in 1948 "(1) To trap and transplant antelope to new areas or to bolster native herds; and (2) To prepare the transplant areas by effectively reducing predators to a minimum." From February to December 1948, 787 coyotes, 35 bobcats, and 7 mountain lions were trapped. In November, 134 antelope were moved to 2 areas that had been intensively trapped. The author is making a study of the effectiveness of restocking and of predator control.

MAMMALS--FURBEARERS (GENERAL)

ASBROOK, FRANK G. Annual fur catch of the United States. 24 pages. U.S.D.I., Fish and Wildlife Service, Wildlife Leaflet 315. November 1948. Free.

Tables for most states show the catch by species for the 5 or 6 years ending with 1947-48.

BACHRACH, MAX. Fur; a practical treatise. Revised edition. 672 pages, illus. Prentice-Hall, Inc., New York. 1946. $7.50.

The 3 parts of this book discuss "Geography of the Fur World", "Physical Properties of Peltries", and "Marketing." The discussion of fur geography is by continents. The discussion of physical properties is largely by natural groups of mammals. The marketing section includes brief chapters on fur farming, classification of mammals, and microscopy (with photos of guard hairs and fur fibers of about 50 species).

FICHTER, EDSON and HYTREK, GEORGE. Nebraska trapper's guide, a handbook on the taking of muskrat, mink, beaver, and coyote and the handling of pelts. 46 pages, illus. Nebraska Game, Forestation and Parks Commission, Lincoln. 1948.

In addition to the matter indicated by the title there is a section on fur management which emphasizes the importance of good land management and the importance of keeping track of populations and regulating the annual take accordingly. It recommends not trapping muskrats before December, fencing livestock away from water and marsh areas, and taking mink as soon as they are prime.

McCRACKEN, HAROLD and VAN CLEVE, HARRY. Trapping: the craft and science of catching fur-bearing animals. 196 pages, illus. A. S. Barnes and Co., New York. 1947. $2.75.

This book by an experienced naturalist and an experienced trapper reviews the history of trapping and the fur industry. A chapter on each important species describes its habits and tells how to trap it.

MAMMALS--FURBEARERS (BEAVER)

CHAPMAN, FLOYD B. The beaver in Ohio. Journal of Mammalogy 30(2): 174-179, illus. May 1949.
Beavers have become reestablished in Ohio during the past 11 years. In 1947, 25 colonies were found in 11 counties. A map shows their distribution. Those in northwestern counties probably migrated from Michigan. Most of those in 8 eastern counties probably originated in Pennsylvania. Important foods are wild apple trees, quaking aspen, domestic fruit trees, cottonwood, elm, willows, smooth alder, and corn.

DUGUAY, JEAN. Une exemple d'aménagement faunique dans la province de Québec: le castor. La Forêt Quebecoise 14(5): 315-323. May-June 1949.
Beaver management in Quebec.

FOOTE, LEONARD E. Vermont's beaver problem. 21 pages, illus. Vermont Fish and Game Service, State Bulletin, Pittman-Robertson Series No. 12. February 1945.
From 1941 to 1944 the beaver population increased from 400 to 1100 animals. Maps show their distribution in 1940, 1941, and 1944. Their spread has been slow, and the author recommends transplanting beaver to other favorable areas. Controlled harvesting probably will be necessary within a decade.

MOORE, GEORGE C. and MARTIN, ERNEST C. Status of beaver in Alabama. 30 pages, illus. Game, Fish, and Seafoods Division, Alabama Department of Conservation, Montgomery. 1949. Free from Editor of Publications, Department of Conservation, 7 North Bainbridge St., Montgomery 4.
This report includes discussions of the major river drainages, former and present range and abundance, limiting factors, importance, natural history, and restocking. Most of the beaver are now in the central part of the State. Between 1942 and 1948 the population increased 5 times. By 1948, 450 beaver had been planted in 36 counties, with promising results. In 1948 trapping was permitted in 15 counties. Recommendations for study and management include (1) continuing restocking for another year, (2) continuing the restricted trapping season for at least 2 more years, (3) investigating habits, ecology, and management of beaver before trying to build up a large population, (4) encouraging erosion control, and (5) deciding whether specific areas are best used for agriculture or for wildlife.

SHAW, SAMUEL P. The beaver in Massachusetts, a research and management study. 45 pages, illus. Massachusetts Department of Conservation, Division of Wildlife Research and Management, Research Bulletin No. 11. September 1948.
Beaver appeared in western Massachusetts in 1928 after an absence of about 150 years. Since then they have become both a nuisance and a potentially valuable resource. This study was made in 1947 and 1948. It included (1) locating all the colonies in the State, (2) determining the potential range, (3) establishing methods for estimating the annual population, (4) determining methods of harvest, (5) determining the practicability of live trapping and transplanting, and (6) recommending laws relative to management.

MAMMALS--FURBEARERS (MUSKRAT & NUTRIA)
(See also BIRDS--WATERFOWL, Gashwiler)

DOZIER, HERBERT L. Color mutations in the muskrat (Ondatra z. macrodon) and their inheritance. Journal of Mammalogy 29(4): 393-405, illus. November 1948.
The author describes brown, black-and-tan, black, fawn, albino, and Maryland white muskrats from coastal Maryland, Virginia, and North Carolina and illustrates them with good photographs.

GASHWILER, JAY S. Maine muskrat investigations. 38 pages, illus. Bulletin of the Maine Department of Inland Fisheries and Game, Augusta. August 1948.
A study begun in 1945 aimed to determine annual productivity, trapping economics, and sound management practices. Most of the data were obtained near Orono and Calais. The author reports on populations, mortality, breeding, litters, food, the harvest, pelts, and management. He recommends that the trapping season be changed to the fall, with the state divided into 3 climatic zones. "Water control..... is one of the simplest and best methods of creating a productive marsh."

HEIT, WILLIAM S. Muskrat weights and sex ratio in the Riverbend Marshes of Wayne County, New York. Journal of Mammalogy 30(2): 122-124, illus. May 1949.
The author's data are from 275 muskrats taken in 1938, 1939, and 1940. 72% were males. Average weight of both sexes was 2 pounds, 11.4 ounces.

LUETH, FRANCIS X. Meet Mr. and Mrs. Nutria. Alabama Conservation 20(12): 4,22. June 1949.
4 pairs of nutrias were brought from Louisiana to the Mobile delta on September 18, 1948. They are to be tested for their ability to control dense marsh vegetation.

WILSON, KEN. Muskrat management in the Northwest River marsh. Wildlife in North Carolina 13(6): 14-16, illus. June 1949.
In 1948 the State acquired about 400 acres of marsh in Currituck Co., North Carolina. This marsh has an estimated winter population of 500 muskrats. A current study aims to find out what combination of food, cover, water, and other factors will produce the largest trappable surpluses. Diking for water level control and eradication of needlegrass (Juncus roemerianus) and other undesirable plants are being undertaken.

MAMMALS--FURBEARERS (FOXES, COYOTE, ETC.)

CAGLE, FRED R. Notes on the raccoon, Procyon lotor megalodeus Lowery. Journal of Mammalogy 30(1): 45-47. February 1949.
Observations in 1946 and 1947 from the Delta National Wildlife Refuge, near the tip of the Mississippi Delta. At normal water levels coons were abundant in the marsh and along the natural levees. Crawfish fragments predominated in the intestines of 15 coons collected in May. In 5 of these there were fragments of shells of 3 species of turtles; in 1 there were bones of a young muskrat. Coons were commonly condemned for their destructiveness to diamond-back turtles and trapped muskrats. The author agrees that they may destroy many turtle eggs but doubts their generally harmful effect on the large muskrat population.

MAMMALS--FURBEARERS (FOXES, COYOTE, ETC.)--Continued

GALE, LARRY. Kentucky foxes not different! Kentucky Happy Hunting Ground 5(2): 13,28, illus. March 1949.

Analysis of 277 red and gray fox scats taken throughout the year 1948 indicates ".....that the food habits of Kentucky foxes are not significantly different from those of foxes in neighboring states." They ate most fruits (particularly persimmon), corn, rabbits, mice, insects, some poultry, and a few other items. There was no evidence of predation on quail nests or chicks. In several study areas high populations of foxes and quail exist together.

GLOVER, FRED A. Fox foods on West Virginia wild turkey range. Journal of Mammalogy 30(1): 78-79. February 1949.

473 fox scats were collected in all but 1 month of a year in 8 counties. Both red and gray foxes are common in the turkey range. The 10 major food items found were deer mouse, meadow vole, cottontail, gray squirrel, white-tailed deer, wild cherry, woodchuck, apple, beechnuts, and wild grape. The first 4 made up about half of the total food. The amount of squirrel, cottontail, and deer jumped with the arrival of the hunting season. Wild turkey and ruffed grouse remains occurred, respectively, 9 and 5 times.

HOWARD, W. E. A means to distinguish skulls of coyotes and domestic dogs. Journal of Mammalogy 30(2): 169-171, illus. May 1949.

The muzzles of all coyotes are longer and narrower than those of dogs. "If the molar tooth-row is 3.1 or more times that of the palatal width, the specimen is a coyote; but if it is less than 2.7 times it is a dog."

ROSKO, LEO. Losses of sheep from predatory animals on summer ranges in Iron County, Utah. 16 pages, illus. Special Report of the Utah Cooperative Wildlife Research Unit and Range Department Project of the Utah Experiment Station, Logan, Utah. February 1, 1948.

This study was made June 1-October 10, 1947 on a 250-square-mile area near Cedar City. 30 herds, totalling 64,000 sheep, were under close observation. 192 sheep were killed by predators--all but 6 of these by coyotes. A trapping program aimed to catch the coyotes actually doing the killing. 31 were trapped. Losses were highest on rough brushy ranges. Losses from other causes were 2½ times the losses from predators.

STEELE, JAMES H. and TIERKEL, ERNEST S. Rabies problems and control, a nation-wide program. Public Health Reports 64(25): 785-796. June 24, 1949.

The authors recognize that "Without the problem of wildlife rabies, eradication of this disease from the United States would be a substantially easier task." Rabies is now present in wild mammals (mostly foxes, but also civet cats, skunks, and coyotes) in the Appalachian states from New York to Georgia, west in the South to Texas and in the North to Iowa. Cooperative trapping programs have helped to smother serious outbreaks.

MAMMALS--RODENTS (DOMESTIC RAT)

DAVIS, DAVID E. The weight of wild brown rats at sexual maturity. Journal of Mammalogy 30(2): 125-130, illus. May 1949.
Sexually mature males averaged smaller in Baltimore than on a nearby farm. Sexually mature females averaged larger in Baltimore than on a nearby farm.

DAVIS, DAVID E. and FALES, W. T. The distribution of rats in Baltimore, Maryland. The American Journal of Hygiene 49(3): 247-254, illus. May 1949.
The population of rats in residential Baltimore was estimated in September 1947 through an evaluation of signs. Greater numbers of rats were in areas with more buildings in need of major repairs.

PISANO, ROCCI G. and STORER, TRACY I. Burrows and feeding of the Norway rat. Journal of Mammalogy 29(4): 374-383, illus. November 1948.
This study was made in poultry yards at Davis, California in the summer of 1947. 34 burrows were dug out and 46 dens found. Food was grass and weed seeds, barley, and poultry feed. The authors describe burrows, entrances, bolt holes, dens, shucking stations, runways, tunnel making, and daytime activities.

MAMMALS--RODENTS (MICE, ETC.)

BRAMBLE, WILLIAM C. and SHARP, WARD M. Rodents as a factor in direct seeding on spoil banks in central Pennsylvania. Journal of Forestry 47(6): 477-478. June 1949.
In direct seedings rodents are the most important cause of failure. Seed losses were entirely due to Peromyscus leucopus noveboracensis. Cages for seed spots proved too expensive. Trapping and poisoning are being tested. --N. W. Hosley.

ERICKSON, ARNOLD B. Summer populations and movements of the cotton rat and other rodents on the Savannah River Refuge. Journal of Mammalogy 30(2): 133-140, illus. May 1949.
Observations covered the period May 1 to September 6, 1946. Trapping was confined to 30.6 acres of small islands and dykes surrounded by marsh. 158 cotton rats were trapped. Other species taken were house mouse, wood rat, rice rat, and cotton mouse.

IVEY, R. DeWITT. Life history notes on three mice from the Florida east coast. Journal of Mammalogy 30(2): 157-162. May 1949.
3 species of Peromyscus (polionotus, gossypinus, and nuttalli) occur on a single barrier island. The author gives details of habits and habitats.

MAMMALS--RODENTS (MICE, ETC.)--Continued

JENKINS, HUBERT O. A population study of the meadow mice (Microtus) in three Sierra Nevada meadows. Proceedings of the California Academy of Sciences, 4th series, 26(3): 43-67, illus., June 1948.

Data were obtained on 195 individuals of 2 species, Microtus longicaudus sierrae and Microtus montanus yosemite. "Individual ranges were measured for purposes of comparison by taking the greatest distance between any two points of capture for each individual Microtus and the following conclusions are reached: (a) Males of both species have wider ranges than females. (b) Individuals of M. longicaudus have wider ranges than those of M. montanus in both sexes....." The population probably was never more than 10 per acre for any season and the length of life was, with few exceptions, less than one year.--M. A. Slattery.

RAUSCH, ROBERT and SCHILLER, EVERETT L. Some observations on cestodes of the genus Paranoplocephala Luehe, parasitic in North American voles (Microtus spp.) Proceedings of the Helminthological Society of Washington 16(1): 23-31, illus. January 1949.

Nearly 1000 voles and near relatives from the north-central states were examined by Rausch during the past 6 years. The authors discuss 3(or 4) species of Paranoplocephala.

RAUSCH, ROBERT and TINER, JACK D. Studies on the parasitic helminths of the North Central States. II Helminths of voles (Microtus spp.) Preliminary Report. The American Midland Naturalist 41(3): 665-694, illus. May 1949.

Beginning in 1942 the authors examined 648 voles from Ohio, Michigan, Indiana, Illinois, and Wisconsin. Most of the specimens were Microtus p. pennsylvanicus. They also examined a large variety of other mammals in a study area in Michigan and in a study area in Wisconsin. The article includes notes on vole biology and ecology and a systematic discussion of the host-parasite relationships of the 22 helminths found. There is a list of about 40 references.

REYNOLDS, HUDSON G. and HASKELL, HORACE S. Life history notes on Price and Bailey pocket mice of southern Arizona. Journal of Mammalogy 30(2): 150-156, illus. May 1949.

This study was made on the Santa Rita Experimental Range, near Tucson. Populations averaged about 1 mouse to 3 acres. Food items in cheek pouches were mostly large seeds of unimportant range plants.

STICKEL, LUCILLE F. An experiment on Peromyscus homing. The American Midland Naturalist 41(3): 659-664. May 1949.

48 adult Peromyscus leucopus noveboracensis, captured in flood plain forest on the Patuxent Research Refuge, Maryland, were marked with numbered ear tags and released at a central point 500-700 feet from the capture sites. 89% of the males and 67% of the females returned home or to a closely adjacent area. Behavior of the transferred mice is compared with that of 39 others released at the sites of capture.--Lucille F. Stickel.

MAMMALS--RODENTS (MICE, ETC.)--Continued

STICKEL, LUCILLE F. and STICKEL, WILLIAM H. A Sigmodon and Baiomys population in ungrazed and unburned Texas prairie. Journal of Mammalogy 30(2): 141-150. May 1949.

A 6-acre plot in ungrazed and unburned tall grass prairie at Camp Bullis, Bexar Co., Texas was studied by live trapping. The home range of Sigmodon hispidus was less than 100 feet in diameter for females and less than 200 feet for males. The home range of Baiomys taylori was less than 100 feet in diameter for both sexes. Population density of Sigmodon was 10-12 per acre, of Baiomys 6-8 per acre. Both species were rare in burned prairie that was nearly identical except for the absence of a grass mat. It is suggested that the low populations of small mammals on the eastern portion of the Edwards Plateau can be explained in part by (1) elimination of the grass mat by grazing or annual burning, (2) the firmness and toughness of the stony clay soil.--Lucille F. Stickel.

MAMMALS--RODENTS (SQUIRRELS & POCKET GOPHERS)

McCLELLAND, E. H. Notes on the red squirrel in Pittsburgh. Journal of Mammalogy 29(4): 409-412. November 1948.

Notes on food habits and other behavior of red squirrels, gray squirrels, and chipmunks, extending back to 1925.

POOLE, FRASER. A note on the squirrels of Yosemite. Yosemite Nature Notes 28(4): 28-30, illus. April 1949.

Yosemite has 3 kinds of ground squirrels, 2 kinds of tree squirrels, and a flying squirrel, each in a characteristic environment.

WOOD, JOHN EUGENE. Reproductive pattern of the pocket gopher (Geomys breviceps brazensis). Journal of Mammalogy 30(1): 36-44. February 1949.

Reproduction in Brazos County, Texas in 1946-1947 continued from February through August. The peak was in June and July, with a lesser peak in April. In several instances females produced 2 litters in rapid succession. The average number of young was 2.66. Sexual maturity was reached in 3 months. "Post-mortem examinations were performed on 585 pocket gophers collected over a continuous period from September 1946 to August 1947."

MAMMALS--RABBITS
(See also MAMMALS--BIG GAME (DEER), Sylvester)

HALE, JAMES B. Aging cottontail rabbits by bone growth. The Journal of Wildlife Management 13(2): 216-225, illus. April 1949.

"The epiphyseal cartilage test proposed by Thomsen and Mortensen (1946) for classifying the age of cottontails was found, during two winters, to be valid in southern Wisconsin to January 15 in 12 young of known age." "The progressive decline in per cent of open epiphyses beyond the limiting date is proposed as a means of estimating birth-months of the surviving young in a winter population."

MAMMALS--RABBITS--Continued

PIEMEISEL, R. L. Natural replacement of weed hosts of the beet leafhopper as affected by rodents. 48 pages, illus. U.S.D.A. Circular No. 739. December 1945. 30¢ from Government Printing Office.

Studies of plant succession were made from 1930 to 1944 on 3 fenced plots of 40 acres each in southern Idaho. Fire, plowing, and livestock grazing were excluded for 6 years. Jackrabbits were excluded from small plots within each of the 40-acre plots. Destruction of vegetation by jackrabbits was comparable to destruction by grazing or fire. Such destruction maintained weedy annual plants that are hosts to the beet leafhopper. This leafhopper is a vector of a virus disease that affects sugar beets, beans, and tomatoes.

MAMMALS--INSECT-EATERS

MOORE, JOSEPH CURTIS. Notes on the shrew, Sorex cinereus, in the southern Appalachians. Ecology 30(2): 234-237. April 1949.

In August 1947 the author trapped 23 shrews in pit traps in oak-chestnut forest at Mountain Lake, Giles Co., Va. They were active both in the daytime and at night. They were much more heavily parasitized by chiggers than by fleas or ticks. The females showed a lull in breeding.

SCHEFFER, THEO. H. Dealing with the mole. 4 pages, illus. Western Washington Experiment Station, Mimeograph Circular No. 146. May 1949.

A review of the habits of the western mole. Trapping is the best way to control it.

MAMMALS--MARINE

BARTHOLOMEW, GEORGE A., JR. A census of harbor seals in San Francisco Bay. Journal of Mammalogy 30(1): 34-35, illus. February 1949.

The author made almost daily counts from April to November 1944. He suggests reasons for the great day-to-day variation in numbers.

SCHEFFER, VICTOR B. The Dall porpoise, Phocoenoides dalli, in Alaska. Journal of Mammalogy 30(2): 116-121, illus. May 1949.

In 1947 and 1948 Dall porpoises were recorded 72 times (about 350 individuals) between Vancouver Island and southern Bering Sea. They were most abundant in southeastern Alaska. The author tabulates measurements and describes body forms, color, dentition, etc. of 5 specimens.

BIRDS (GENERAL)--BEHAVIOR

GRIFFIN, DONALD R. and HOCK, RAYMOND J. Airplane observations of homing birds. Ecology 30(2): 176-198, illus. April 1949.

A detailed account of the experiment reported upon in Science for April 2, 1948 (abstracted on page 17 of Wildlife Review No. 56). Gannets were taken from their nests on Bonaventure Island, Quebec and released at coastal and inland points. They showed pronounced homing ability. 9 gannets released at Caribou, Maine, 213 miles from home, were observed from an airplane for 25 to 230 miles. Their flight paths radiated in all directions. The birds that ".....reached the vicinity of the coastline within the first few hours were the first to return to their nest;....."

BIRDS (GENERAL)--BEHAVIOR--Continued

HOWARD, ELIOT. Territory in bird life. New edition. 224 pages, illus. Collins, 14 St. James's Place, London. 1948. 10 shillings, 6 pence.
This is the original account of the widely accepted territory theory. It was first published in 1920.

BIRDS (GENERAL)--FAUNAS & MANUALS

HALPE, IRVING E. and KOLB, HAVEN. A preliminary list of birds of Maryland and the District of Columbia. 80 pages, illus. The Natural History Society of Maryland, 2101 Bolton St., Baltimore 17. $1.10.
An annotated list of 338 accepted forms (312 species) and 27 hypothetical forms. There is a bibliography of about 130 items.

JOHNSTON, DAVID W. Populations and distribution of summer birds of Latah County, Idaho. The Condor 51(3): 140-149, illus. May-June 1949.
In 1947 the author studied the summer populations of two 20-acre tracts of conifer forest in this northern Idaho county. The climax forest tract, dominated by Douglas fir, had 23 species with a density of 435 pairs per 100 acres. The cutover, brushy tract had 24 species with a density of 376 pairs per 100 acres. Townsend warbler and Swainson thrush were the commonest birds on each tract. An annotated list of approximately 125 species summarizes the observations of the author and several other individuals.

KEMSIES, EMERSON. Birds of Cincinnati and southwestern Ohio. 60 pages. Ohio Audubon Society, Cincinnati. December 1948.
Notes on distribution and abundance of all the birds known from the vicinity of the Ohio River in Hamilton, Clermont, and Butler Counties.

MANVILLE, RICHARD H. Bird notes from northern Michigan. The Wilson Bulletin 61(2): 106-108. June 1949.
Notes on 29 species, supplementing the account of the birds in the author's "The Vertebrate Fauna of the Huron Mountains, Michigan", published in the May 1948 American Midland Naturalist (See page 3 of Wildlife Review No. 56).

PETERSON, ROGER TORY. A field guide to the birds, giving field marks of all species found east of the Rockies. Second revised and enlarged edition. 290 pages, illus. Houghton Mifflin Co., Boston. 1947. $3.50.
All of the illustrations in this edition are new; and many more are in color than in former editions (1934 and 1939). The text is more elaborate than before, but there is little that one would choose to do without. Emphasis is still on truly distinguishing characters.

SOPER, J. DEWEY. Birds observed in the Grande Prairie--Peace River region of northwestern Alberta, Canada. The Auk 66(3): 233-257, illus. July 1949.
The author paid particular attention to waterfowl in this 1944 survey of an area 270 by 130 miles in extent. He describes topography and vegetation, and gives abundance and distribution for more than 160 kinds of birds.

BIRDS (GENERAL)--MORTALITY

SPOFFORD, WALTER R. Mortality of birds at the ceilometer of the Nashville airport. The Wilson Bulletin 61(2): 86-90. June 1949.

Approximately 300 birds were killed or incapacitated at Nashville, Tennessee in one early September 1948 night. Most were passerines, but there were 6 pied-billed grebes, a bittern, and 2 soras.

BIRDS (GENERAL)--POPULATIONS
(See also BIRDS (GENERAL)--BEHAVIOR, Howard)

DeGAMO, W. R. Breeding-bird population studies in Pocahontas and Randolph Counties, West Virginia. Audubon Field Notes 2(6): 219-222. November 1948.

In June 1948 The Brooks Bird Club studied the populations of 5 areas. 3 of these areas were studied in 1947 by Stewart and Aldrich and were reported upon in the January 1949 Ecology (See page 19 of Wildlife Review No. 56).

ROBBINS, CHANDLER S. and others. Forty-ninth Christmas bird count. Audubon Field Notes 3(2): 35-156, illus. April 1949.

357 counts are tabulated. They are well distributed in the East but sparse in the West (none in Idaho and Nevada). Southern Canada has 14, Hawaii 1, and Cuba 1. The report includes a discussion of weather, rarities, and general trends, and a systematic tabulation of species showing the largest number of individuals of each and the locality from which they were reported.

STEWART, ROBERT E., editor. Twelfth breeding-bird census. Audubon Field Notes 2(6): 223-244, illus. November 1948.

The 29 censuses reported are from 14 states and Ontario. Each is in a different uniform or mixed habitat (marsh, scrub, forest, orchard, prairie, etc.).

STEWART, ROBERT E., editor. Winter bird-population study. Audubon Field Notes 3(3): 186-196. June 1949.

The 20 censuses reported are from 12 states. They are in uniform habitats in forest, marsh, and scrub; and in mixed habitats that include park and farmland.

BIRDS--WATERFOWL
(See also WATER, Schoenfeld)

GASHWILER, JAY S. The effect of spring muskrat trapping on waterfowl in Maine. The Journal of Wildlife Management 13(2): 183-188. April 1949.

Approximately 2000 ducks were killed in muskrat traps in Maine in 1946. As many more were trapped and released alive. Most of the loss was among surface feeders.

BIRDS--WATERFOWL--Continued

GIST, M. N. Wild-goose cafeteria. Florida Wildlife 2(12): 6-7,19, illus. May 1949.

The author planted several species of marsh and water plants on a 2½-acre tract at McIntosh, Fla. After they were established he watched their use by captive geese of several species. At the end of 2 years he concluded that their main foods, in decreasing order of preference, were grass-leaved sagittaria, waterweed, coontail, banana waterlily, under-water banana plant, watershield, frogbit, thalia, and bulrushes.

GLOVER, FRED A. The 1947 fall migration of aquatic birds through central Iowa. Iowa Bird Life 18(3): 43-47. September 1948.

32 species were recorded at Goose and Little Wall Lakes, Hamilton Co., in the fall of 1947. 13 of these were ducks.

HANSON, HAROLD C. Methods of determining age in Canada geese and other waterfowl. The Journal of Wildlife Management 13(2): 177-183, illus. April 1949.

The author has used successfully a physician's nasal speculum and a probe for cloacal examinations of live geese at Horseshoe Lake, Illinois. He discusses and tabulates criteria of age (tail feathers, bursa of Fabricius, naked area, penis, oviduct) in juvenile, yearling adult, and older adult geese. Live female mallards and pintails also have been successfully aged by using a speculum.

KALMBACH, E. R. A scanning device, useful in wildlife work. The Journal of Wildlife Management 13(2): 226-227, illus. April 1949.

The author discribes a device that aids in the counting of large numbers of waterfowl on aerial photographs.

KURODA, MARQUIS NAGAMICHI, editor. A bibliography of the duck tribe, Anatidae, mostly from 1926 to 1940, exclusive of that of Dr. Phillips's work. 852 pages. Herald Press, Tokyo. October 1942. (Copied from The Auk for July 1948, page 469).

A review by J. L. Peters says that this bibliography continues from where Dr. Phillips's ends, as well as including geese and swan references back to 1849. It has 6539 items, each annotated. They are arranged chronologically and are comprehensively indexed.

MANN, GRADY. Notes from a study of the blue-winged teal. The Flicker 21(1): 1-6, illus. March 1949.

In 1947 the author studied nesting, brood development, destructive influences on habitat, and hunting season sex and age data in the vicinity of the Twin Cities and at Swan Lake and elsewhere in southcentral Minnesota. Broods observed totalled 97 (755 young). Destruction of shoreline vegetation by cattle was common.

BIRDS--WATERFOWL--Continued

PERRY, ROBERT F. Spring geese at Oak Orchard. New York State Conservationist 3(5): 16, illus. April-May 1949.

The Oak Orchard Game Management Area in western New York is being managed for geese through the use of shallow impoundments and small grain plantings. More than 15,000 geese were in the area on April 10, 1949.

ROSEN, MERTON N. and BISCHOFF, ARTHUR I. The 1948-49 outbreak of fowl cholera in birds in the San Francisco Bay area and surrounding counties. California Fish and Game 35(3): 185-192, illus. July 1949.

An epizootic of fowl cholera in wild birds spread from the south end of San Francisco Bay northward through the Sacramento Delta between December 7, 1948 and January 25, 1949. Similar outbreaks occurred during each of the preceding 4 winters. Eating of carcasses by gulls seemed to hasten the spread of the disease. About 40,000 waterfowl died (70% coots; 20% ducks; 10% gulls, etc.) Carcasses were burned and other control measures tried. Research is continuing on what starts an outbreak and on control.

SPINNER, GEORGE P. Observations on greater snow geese in the Delaware Bay area. The Auk 66(2): 197-198, illus. April 1949.

An aerial photograph taken at an altitude of about 500 feet on March 29, 1945 shows a flock of 13,494 geese. Estimates of the number by 143 people showed enormous variance; but experienced observers came much closer to the actual number than did the inexperienced.

STILES, BRUCE F. The blue goose: is it changing its migration through Iowa? Iowa Bird Life 18(1): 9-13, illus. March 1948.

Increasing numbers of blue geese have been stopping in Iowa in the fall since 1940.

BIRDS--FISH-EATERS
(See also BIRDS--WATERFOWL, Rosen & Bischoff)

KENYON, KARL W. Murres--mariners of the North. Natural History 58(1): 24-28, illus. January 1949.

A well-illustrated account of the habits of Pallas and California murres in the Pribilof and Aleutian Islands and in California. Their eggs are a favorite food of men and blue foxes.

KRASOVSKI, S. K. The biological basis for the economic exploitation of bird-cliffs. Studies on the biology of the guillemot (Uria lomvia L.). Transactions of the Arctic Institute of the USSR 77: 33-91, Leningrad, 1937. (In Russian with English summary).

Studies were made at Nameless (Bezymiannaya) Bay, Novaya Zemlya where an estimated 1,600,000 murres nest. Laying begins June 10 to 12. If the first egg is lost, female will lay a second in 17 days. In rare instances a third egg may be laid when the second is lost. Food for young: small cod (Gadus and Boreogadus) 74%, caplin (Mallotus) 11%, lant (Ammodytes) 10%, Aspidophoroides 5%. The chief enemy is the glaucous gull.

BIRDS--FISH EATERS--Continued

Recommendations for harvesting eggs include limiting the number of eggs collected to 10% of the total population, limiting the duration of collecting to the 16 days after the first laying, and prohibiting visits to the colony and shooting birds after this date. Rotating areas exploited, giving each area a 3-year rest after one collecting season; extermination of birds of prey, especially the glaucous gull; and increasing the potential nesting area by building up ledges and clearing vegetation are suggested as management procedures.--Robert W. Storer.

PAYNTER, RAYMOND A., JR. Clutch-size and the egg and chick mortality of Kent Island herring gulls. Ecology 30(2): 146-166, illus. April 1949.

In 1947 the author studied 100 nests in a colony of 25,000-30,000 birds on this small southern New Brunswick island. Mean clutch size was approximately 2.5. 71% of the eggs laid hatched. Mortality in 3-egg nests was lower than in 2-egg nests. Nearly 20% of the birds died in the first 7 days after hatching. About 50% survived to the seventh week.

POUGH, RICHARD H. Whose fish is it? Audubon Magazine 51(2): 90-96, illus. March-April 1949.

A discussion of bird predation at fish hatcheries. Screening of hatcheries for cold-water fish has advantages to fish beyond that of excluding birds. The author recommends the general use of screens and gives specifications.

SALYER, J. CLARK, II and LAGLER, KARL F. The eastern belted kingfisher, Megaceryle alcyon alcyon (Linnaeus), in relation to fish management. Transactions of the American Fisheries Society 76 (year 1946): 97-117. 1949.

The kingfisher is the commonest bird predator of fish in Michigan. At hatcheries it takes mostly the fish being propagated, and so is undesirable. On natural waters its food is mostly non-food and non-game fishes and crayfish.

SPRUNT, ALEXANDER, JR. Population survey, tern colonies of the Dry Tortugas, Fort Jefferson National Monument, 1947. The Florida Naturalist 21(1): 16-21, illus. October 1947; and 21(2): 25-31. January 1948.

This is the third successive annual report. Birds nested on 4 keys, in contrast to 1 key in 1946. More than half of the nesting sooty terns deserted Bush Key and nested on Garden Key. They totalled 64,000. There were 250 noddies and about the same number of roseate terns.

SPRUNT, ALEXANDER, JR. Tern colonies of the Dry Tortugas Fort Jefferson National Monument--1948. The Florida Naturalist 22(1): 9-16. October 1948.

This is the fourth successive annual report. All sooty and noddy terns nested on Bush Key. The author cannot explain their desertion of it in 1947 or their return to it in 1948. There were 104,000 sooty terns, 300 noddies, and 450 roseate terns.

BIRDS--SHOREBIRDS

BECK, HERBERT H. Status of the upland plover in Lancaster County, Pennsylvania. The Auk 66(2): 202-204. April 1949.

The author began in early August 1921 to estimate the status of the upland plover by censusing 4 widely separated tracts. Helped by 8 other men he took the tenth similar census in early August 1947. On the 7 square miles of the 4 tracts they found 108 birds. There has been a general increase in upland plover since they were first protected in 1914; but the author believes that destruction in southern South America during our winter now balances the rate of production.

URNER, CHARLES A. and STORER, ROBERT W. The distribution and abundance of shorebirds on the north and central New Jersey coast, 1928-1938. The Auk 66(2): 177-194, illus. April 1949.

Urner published several yearly summaries during the early part of this study. The present article summarizes data for each of the last 4 years and for the entire 10-year period. 41 species were recorded on southbound migrations, the most abundant being semipalmated sandpiper, short-billed dowitcher, sanderling, lesser yellowlegs, semipalmated plover, and red-backed sandpiper. Of the 31 species recorded on northward migrations the most abundant were semipalmated sanpiper, short-billed dowitcher, red-backed sandpiper, black-bellied plover, and semipalmated plover. There was a general increase during the period.

BIRDS--UPLAND GAME (GENERAL)

DAY, ALBERT M. A new look at exotics. Field & Stream 54(1): 54-55, 145-147, illus. May 1949.

The author recommends a careful study of foreign game birds in their native habitats as a preliminary to their attempted introduction into United States.

SCHWARTZ, CHARLES W. and SCHWARTZ, ELIZABETH REEDER. A reconnaissance of the game birds in Hawaii. 168 pages, illus. Board of Commissioners of Agriculture and Forestry, Territory of Hawaii. 1949.

This bulletin describes clearly the Hawaiian environment, predators, general management, former native game birds, and a dozen introduced species. It discusses in detail pheasants (ring-necked and green), California quail, lace-necked dove, barred dove, Japanese quail, pigeon, and jungle fowl. For each there is an evaluation of the population and the range, an outline of its life history, and recommendations for management. Many photos and drawings, and several colored maps complement the text. The drawings are beautiful.

BIRDS--UPLAND GAME (BOBWHITE)

LEE, LEVON. The fall and winter food of the bobwhite in Oklahoma. 23 pages, illus. Oklahoma Game and Fish Department, Oklahoma City. 1948.
This study, made mostly in 1946 and 1947, covered the principal quail food and cover types of the State. Two-thirds of the food in more than 400 crops was sorghums, ragweeds, sunflowers, Korean lespedeza, oaks, Johnson grass, buckthorn, corn, little wild bean, and trailing wild bean. Principal foods in different game types varied only slightly from those in the State as a whole. Not too clean farming plus prevention of heavy grazing and fire will guarantee adequate food and cover.

BOGLE, M. E. Some plain talk about bobwhite quail for stocking purposes. 25th Annual Publication. 38 pages. M. E. Bogle, 527 Ogden Street, San Antonio 2, Texas. Spring 1948.
A game shipper writes about the quail situation--nothing very concrete. --M. A. Slattery.

HUNTER, CARL. The bobwhite quail in Arkansas. 24 pages, illus. Arkansas Game and Fish Commission, Little Rock. 1948.
A general account of the history, habits, and environment of bobwhite; with suggestions for habitat improvement.

JOHNSON, BRUCE C. and PEARSON, ALLEN M. Limestone valley quail foods. Alabama Conservation 20(9): 14,30, illus. March 1949.
In crops taken in February, 1937-1940 and 1942, 70% of all food was legumes (more than half of these were common and Korean lespedezas). Oak and pine mast were next in importance.

SCHULTZ, VINCENT. Review of literature on factors affecting bobwhite quail (Colinus v. virginianus) population fluctuations. Ohio Journal of Science 49(2): 85-88. March 1949.
The author concludes that ".....population fluctuations in Ohio.....are probably not due to any one factor but are the result of interactions of many factors." He cites 26 publications.

THOMPSON, DONALD R. and KABAT, CYRIL. Hatching dates of quail in Wisconsin. The Journal of Wildlife Management 13(2): 231-233, illus. April 1949.
The authors determined hatching dates by obtaining a random collection of juvenile quail in the fall. These data differ from those obtained from a conventional nesting study in representing only what lives until fall. There were 2 peaks of hatching in 156 broods alive in the fall of 1947. Half of the broods hatched after August 1.

UHLIG, HANS G. Analysis made of data gathered in quail study. West Virginia Conservation 12(4): 4-5,23, illus. April 1949.
In 1948, more than 80% of 236 wings returned by hunters in 8 counties were from birds of the year. This shows a reasonably successful nesting season.

BIRDS--UPLAND GAME (PHEASANT)

MOORE, PAUL J. Are Illinois pheasants overshot? Illinois Conservation 13(3-4): 6-9, illus. Winter 1948-49.

A recent study on 10 areas shows that it is next to impossible to exterminate the cocks. Their open season could be extended if if did not increase the accidental killing of hens.

PUSHEE, GEORGE F., JR. Summary report, pheasant banding studies, 1943 to 1948. 22 pages, illus. Massachusetts Department of Conservation, Division of Wildlife Research and Management, Research Bulletin No. 9. June 1948.

Some conclusions from these studies are (1) that stocking 10-12-weeks-old birds is more economical and provides more sport than stocking 17-20-weeks-old birds, (2) most birds were shot near where they were released, (3) about 1/3 of the annual kill was on the first day of the season and 2/3 by the end of fourth day, (4) few birds were taken in the years after they were stocked, (5) three-fourths of the hunting is supplied by natural reproduction, and (6) during a 4-year period an average of 37 birds were shot of every 100 released.

TABER, RICHARD D. A new marker for game birds. The Journal of Wildlife Management 13(2): 228-231, illus. April 1949.

The author describes a marker consisting of a safety-pin and 2 rubber-film tags that has been used on wild ringnecked pheasants. He discusses durability, visibility, and effect on the well-being of the bird.

BIRDS--UPLAND GAME (RUFFED GROUSE, ETC.)

ERICKSON, ARNOLD B.; HIGHBY, P. R., and CARLSON, C. EDWARD. Ruffed grouse populations in Minnesota in relation to blood and intestinal parasitism. The Journal of Wildlife Management 13(2): 188-194. April 1949.

This study was begun in 1941 at a grouse population peak. It continued until 1947, through a low and into an increase. During this period blood slides were made from 163 birds and intestinal parasites were examined from 231. In 1941 about 60% of the grouse were infected with the protozoan Leucocytozoon. Infection increased until 1947. There was no correlation between worm infestations and changing grouse populations.

GARDINER, JOHN L. and WEHR, EVERETT E. Some parasites of the wild turkey (Meleagridis gallopavo silvestris) in Maryland. Proceedings of The Helminthological Society of Washington 16(1): 16-19. January 1949.

Several turkeys in a club-maintained flock at Hancock, Maryland had sinusitis in July 1948. 2 individuals were observed for several days, then necropsied. Tapeworms and nematodes were present in large numbers. The authors discuss practical sanitary measures that will keep down large numbers of parasites.

BIRDS--UPLAND GAME (RUFFED GROUSE, ETC.)--Continued

HORSE, W. B. The band-tailed pigeon. Oregon State Game Commission Bulletin 4(7): 1,5,7. July 1949.

In the past 7 years there has been a big increase in band-tailed pigeon hunting in Oregon. Hunting pressure may now be more than the species can stand. Proposals for management include education and several ways of regulating the take. More information is needed on habits and populations.

BIRDS--HAWKS & OWLS

HAMMOND, MERRILL C. and HENRY, C. J. Success of marsh hawk nests in North Dakota. The Auk 66(3): 271-274. July 1949.

The authors gathered these data principally in 1937, 1938, and 1939. They banded 150 young and received returns on 12. Tables show clutch size, nests and eggs hatched, and survival of young. 68% of nests observed held at least 1 young to banding and fledgling ages.

SNYDER, L. L. The snowy owl migration of 1946-47: third report of the snowy owl committee. The Wilson Bulletin 61(2): 99-102, illus. June 1949.

The 1945-46 flight was the largest on record. It spread across the continent. In 1946-47 the flight in the East was scarcely one-tenth that of the previous year, while in the West it was even greater than that of the previous year. In 1946 the eastern Arctic population was low; the western Arctic population was high.

BIRDS--SONGBIRDS

BENT, ARTHUR CLEVELAND. Life histories of North American thrushes, kinglets, and their allies: Order Passeriformes (Families Turdidae and Sylviidae). 439 pages, illus. Smithsonian Institution, United States National Museum Bulletin 196. 1949. $1.50 from Government Printing Office.

The 17th volume in the series of life histories begun by Bent in 1919. There are 51 pages of photographs and a 21 page bibliography.

CYPERT, EUGENE. The redwing flight at Reelfoot Lake. The Kentucky Warbler 25(1): 8-10. February 1949.

Literally millions of redwings roost nightly at Reelfoot Lake in fall and winter. Nearly 2000 acres of shallow water are covered by giant cutgrass (Zizaniopsis); and it is in it that most of the birds roost. The author believes they may feed as far away as 40 miles.

DENNIS, JOHN V. Grackle competition for dogwood fruit. The Auk 66(2): 208. April 1949.

About 20 heavily fruiting flowering dogwoods near Leesburg, Va. were much frquented by flickers, cardinals, and tufted titmice in late October. In half an hour, during a hard rain, a flock of 800-900 purple grackles and a few starlings stripped the trees completely.

BIRDS--SONGBIRDS--Continued

DIXON, KEITH L. Behavior of the plain titmouse. The Condor 51(3): 110-136, illus. May-June 1949.

The author studied a population of the plain titmouse in Alameda Co., California from September 1946 to May 1948. He discusses habitat, voice, territory, pair-formation, breeding behavior, nesting, dispersal of juveniles, and roosting. 12 territories averaged 6.3 acres. Adults ".....established on territories, tend to remain paired for life and defend their territories throughout the year."

FARNER, DONALD S. Age groups and longevity in the American robin: comments, further discussion, and certain revisions. The Wilson Bulletin 61(2): 68-81. June 1949.

HOSKING, ERIC and NEWBERRY, CYRIL. The swallow. 60 pages, illus. Collins, 14 St. James's Place, London. 1946. 7 shillings, 6 pence.

This life history of the British form of our barn swallow is based on the authors' personal observations. It is good reading; and it is beautifully illustrated with full-page photos. There are also photos of the sand-martin (our bank swallow).

REPTILES & AMPHIBIANS

FITCH, HENRY S. Road counts of snakes in western Louisiana. Herpetologica 5(4): 87-90. July 1949.

The habitats and relative abundance of snakes of west-central Louisiana are discussed. Snakes of this region are far less abundant than in earlier decades of the century because of heavy logging, frequent burning, increased human population, range hogs, and the advent of the armadillo. Many game animals and other forms of wildlife have suffered similarly. 3 specimens of the little known Pituophis melanoleucas ruthveni were collected and several others were seen.--W. H. Stickel.

FITCH, HENRY S. Study of snake populations in central California. The American Midland Naturalist 41(3): 513-579, illus. May 1949.

This is the most useful and exhaustive field study of snakes yet made. The work was carried on in conjunction with other wildlife studies at the San Joaquin Experimental Range, Madera Co., California from 1938 to 1941 and in 1946-47. The greater part of the data pertain to the Pacific rattlesnake and the gopher snake. The topics discussed include seasonal behavior, size and sex composition of the population, weight and growth, number of rattles in relation to age and size, longevity, reproduction, movement, numbers, feeding, and natural enemies. Among the author's findings about the rattlesnake are the following: Handling and measuring retard growth. Many young are eliminated by starvation. Some individuals live at least 20 years. Females reproduce only in alternate years. The home range is only a few hundred yards across, but greater travels are occasional. No homing tendency is apparent. An individual needs about twice its own weight in food during the growing season. It is estimated that there were about 1.2 rattlesnakes per acre, but even this heavy population had little controlling effect on rodent numbers.--W. H. Stickel.

REPTILES & AMPHIBIANS--Continued

NEILL, WILFRED T. A new subspecies of rat snake (Genus Elaphe), and notes on related forms. Herpetologica 5(2nd supplement): 1-12, June 1949.
This is a systematic review of the eastern rat snakes. The group is of some wildlife importance, as Stoddard has pointed out. The races lindheimeri, obsoleta, confinis, williamsi, quadrivittata, rossalleni (new ssp.) and deckerti are recognized as forms of obsoleta. E. rosacea is regarded as a race of guttata. There is a range map for the races of obsoleta.--W. H. Stickel.

POPE, C. H. and POPE, S. H. Notes on growth and reproduction of the slimy salamander Plethodon glutinosus. Fieldiana 31(29): 251-261, illus. June 1949.
A statistical study was made of 125 specimens from western Virginia. The emphasis is on the correlation of various structures and sexual maturity with size and age. Also discussed are secondary sex characters, egg laying season, and rate of reproduction.--W. H. Stickel.

SMYTH, THOMAS. Notes on the timber rattlesnake at Mountain Lake, Virginia. Copeia 1949(1): 78. April 1949.
The summer food of 13 adult rattlers was entirely mammalian. Peromyscus occurred in 7. Less common foods were Tamias, Sorex, Clethrionomys, Synaptomys, Napaeozapus, and Neotoma.--W. H. Stickel.

TIHEN, J. A. The genera of Gerrhonotine lizards. The American Midland Naturalist 41(3): 580-601, illus. May 1949.
This is a morphological and taxonomic study of the lizards allied to Gerrhonotus. 5 genera are recognized: Coloptychon, Abronia, Barisia, Elgaria, and Gerrhonotus. Of the U. S. forms, liocephalus remains in Gerrhonotus; the other species are placed in Elgaria. A key to the genera would have been a welcome addition.--W. H. Stickel.

WRIGHT, ALBERT HAZEN. Scientific and popular writers on American snakes (1517-1944): a check list and short biography. Herpetologica 5(1st supplement): 1-55. May 31, 1949.
About 1250 individuals are listed. More than two-thirds are still living.

WRIGHT, ALBERT HAZEN and WRIGHT, ANNA ALLEN. Handbook of frogs and toads of the United States and Canada. Third edition. 640 pages, illus. Comstock Publishing Company, Inc., Ithaca, N. Y. 1949. $6.50.
The authors have added much information to that in the previous editions. This includes range maps of all but a few forms and many quotations from the authors' journals and from the notes of others. The 80-page general account contains more than 40 pages on eggs and tadpoles. Keys occupy nearly 25 pages. Small photos illustrate all but a few forms; and each form is described in great detail. Most of a bibliography of nearly 40 pages is composed of local lists arranged by provinces and states.

MOLLUSKS

BAUGHMAN, J. L. An annotated bibliography of oysters, with pertinent material on mussels and other shellfish and an appendix on pollution. 794 pages. The Texas A. & M. Research Foundation, The Agricultural and Mechanical College of Texas, College Station, Texas. 1947.

This bibliography includes many original abstracts and many taken from Chemical Abstracts and Biological Abstracts.

VEGETATION (GENERAL)--COMMUNITIES & HABITATS

CONWAY, VERONA M. The bogs of central Minnesota. Ecological Monographs 19(2): 173-206, illus. April 1949.

In 1946 and 1947 the author studied 18 bogs in 7 counties. This article describes the communities and their succession, the development of acidity, the relations of Picea mariana and Thuja, the relations of the different heaths and mosses, the status of Typha latifolia, and characteristics of the peat. Succession is from pioneer-mat to bog forest, with or without an intervening moss-heath stage. The author makes interesting comparisons with bogs in England and reflects that hydroseres in central Minnesota and elsewhere proceed intermittently, possibly due to climatic rhythms.

WHITE, STEPHEN S. The vegetation and flora of the region of the Río de Bavispe in northeastern Sonora, Mexico. Lloydia 11(4): 229-302, illus. December 1948.

This region, which adjoins Arizona and New Mexico, was investigated in 1938, 1940, and 1941. The principal types of vegetation are mesquite-grassland, oak-grassland, and pine forest. The author describes them; discusses floristic relationships; cites 62 publications; and has an annotated list of 1200 species and varieties, which is made more useful by the addition of an index to collecting stations, a catalog of common names, and a table of altitudinal distribution of about 100 of the common plants.

VEGETATION (GENERAL)--FLORAS & MANUALS
(See also VEGETATION (GENERAL)--COMMUNITIES & HABITATS, White)

ANDERSON, J. P. Flora of Alaska and adjacent parts of Canada. Part VII. Geraniaceae to Plumbaginaceae. Iowa State College Journal of Science 23(2): 137-187, illus. January 1949.

Publication of this flora was begun in 1943. Part VI was issued in July 1947 (See page 35 of Wildlife Review No. 52). Keys and descriptions are concise. Drawings are grouped at the end. They show a flower or fruit and a leaf of most of the species.

HULTÉN, ERIC. Flora of Alaska and Yukon. Part VIII. Lunds Universitets Arsskrift. N. F. Avd. 2. Bd 44. Pages 1201-1341, illus. $3.05.

This part describes the plants from the heath family to the waterleaf family, inclusive. There are small range maps, keys, references to literature and localities, and habitat notes, as in the earlier parts (See page 31 of Wildlife Review No. 53).

VEGETATION (GENERAL)--FLORAS & MANUALS--Continued

TATNALL, ROBERT R. Flora of Delaware and the Eastern Shore: an annotated list of the ferns and flowering plants of the Peninsula of Delaware, Maryland and Virginia. 313 pages, illus. The Society of Natural History of Delaware, Wilmington. 1946. $3.50.

The taxonomy of this flora is dependable; coverage of the region is thorough; and notes on habitat and range are definite and brief.

WEST, ERDMAN and ARNOLD, LILLIAN E. The native trees of Florida. 212 pages, illus. University of Florida Press, Gainesville. 1946. $3.75.

Florida is said to have more than 300 native species, not all of which are described in this book. A map shows 8 distributional areas and the text defines an equal number of habitats. The systematic part of the book comprises a key and mostly full-page descriptions (with drawings) of the species. The drawings are very good and the descriptions are enlivened by a paragraph on distinguishing characters and by general comments on distribution, appearance, and use by man.

VEGETATION (GENERAL)--PROPAGATION

KREFTING, LAURITS W. and ROE, EUGENE I. The role of some birds and mammals in seed germination. Ecological Monographs 19(3): 269-286. July 1949.

Fruits or seeds of 19 species of plants were fed to 5 species of captive birds and the visibly sound seeds were recovered from the droppings. Similarly, fruits of 3 species of plants were fed to and recovered from captive mammals. Seeds of several other plants were recovered from the droppings of wild birds and mammals. "In eight out of sixteen species of seed tested after recovery from bird droppings, germination was definitely improved. It is, therefore, clear that in these species, and doubtless in many others, consumption of their fruit by birds not only assures dispersal of the seed, but due to the improved germination also increases the chances of seedling establishment."

VEGETATION--FOREST
(See also MAMMALS--BIG GAME (DEER), Sylvester)

CHAPLINE, W. R. and WHYTE, R. O. United States of America. In The use and misuse of shrubs and trees as fodder, with tables showing composition and digestibility. Pages 157-176, illus. Imperial Agricultural Bureaux, Joint Publication No. 10. June 1947. 9 shillings.

Subjects discussed are "Forest Grazings", "Controlling Shrubs on Grassland or Other Ranges", "Browse as Forage", "Important Browse Species", "Range Reseeding or Replanting", and "Browse for Wildlife." The last contains a brief account of the principal species eaten and indicates some competition between livestock and deer and elk. There is a list of about 50 references.

VEGETATION--FOREST--Continued

LEMON, PAUL C. Successional responses of herbs in the longleaf-slash pine forest after fire. Ecology 30(2): 135-145. April 1949.

On the Alapaha Experimental Range, Georgia fresh burns had a greater variety of forage plants than did areas protected from fire for several years. "Grazing values in the native ranges of the southeastern coastal plain are improved by judicious winter burning."

LITTLE, S., and MOORE, E. B. The ecological role of prescribed burns in the pine-oak forests of southern New Jersey. Ecology 30(2): 223-233, illus. April 1949.

Controlled burns favor the germination and establishment of pines and reduce the density and height of shrubby understories.

LIVINGSTON, ROBERT B. An ecological study of the Black Forest, Colorado. Ecological Monographs 19(2): 123-144, illus. April 1949.

This forest is on the low divide between the South Platte and Arkansas Rivers, just east of the mountains in central Colorado. It is surrounded by grassland. Most of the forest lies south of the summit of the divide, and climatic factors do not determine its distribution. The coniferous forest and Gambel oak chaparral grow on coarse-textured soils that have a more stable supply of water than do the fine-textured soils that underlie the grasslands. Most of the forest is postclimax ponderosa pine. Secondary succession from annual weeds to perennial weeds to pine may take as little as 4 years.

McCORMACK, JAMES F. and CRUIKSHANK, JAMES W. South Carolina's forest resources, 1947. 122 pages, illus. Southeastern Forest Experiment Station, Forest Survey Release No. 28. April 1949.

South Carolina's forests were inventoried in 1934-36 and again in 1946-47. During this period the area of commercial forest land increased 11%. Most of the increase was in the Piedmont where much agricultural land had reverted to forest. In spite of this increase, the volume of saw timber was 10% less in 1947 than in 1936. Overcutting was severe in the Southern Coastal Plain. About 93% of the commercial forest land is privately owned. There are brief descriptions of forest types (longleaf pine, loblolly pine, shortleaf pine, pond pine, cypress, lowland hardwoods, upland hardwoods, and scrub oak). Data are based on the study of aerial photos and the field examination of plots.

PEEVY, FRED A. and CAMPBELL, ROBERT S. Poisoning southern upland weed trees. Journal of Forestry 47(6): 443-447. June 1949.

Discusses two-year experiments with weed killers used to improve composition of forest stands.--N. W. Hosley.

VEGETATION--FOREST--Continued

ROBERTS, E. V. and others. Forest resources of Illinois. Central States Forest Experiment Station, Forest Survey Release No. 7. 53 pages, illus. June 1949.

A map of the 3 forest survey regions of the State shows the amount of forest in each county. Forest covers 26% of the southern region and 11% of the total land area. Nearly half of the forest is oak-hickory. Other types are white oak, mixed hardwoods, pin oak flats, bottomland hardwoods, and scrub hardwoods. Saw timber stands occur on 46% of the commercial forest land. More than half of the saw timber is oak. There is a brief description of the forest types and a list of species. Data are based on the study of aerial photos and the field examination of plots.

SANDBERG, LYNN; HORN, ARTHUR G.; and GUILKEY, PAUL C. The forest resource of Aitkin County. 54 pages, illus. Office of Iron Range Resources and Rehabilitation, State Office Bldg., St. Paul 1, Minn. 1949?

77% of the county's land area is commercial forest. Aspen, grass-upland brush, and lowland brush each cover about 20% of this area. Pines cover less than 1% and are being seriously overcut. Aspen and other hardwoods are being undercut. Production on the brushlands is at a standstill. 70% of the forest area is in public ownership. There are descriptions of a dozen cover types.

TISDALE, E. W. and CAMPBELL, J. A. Canada. In The use and misuse of shrubs and trees as fodder, with tables showing composition and digestibility. Pages 177-184, illus. Imperial Agricultural Bureaux, Joint Publication No. 10. June 1947. 9 shillings.

Subjects discussed are "Principal Trees and Shrubs of Forage Value", "Chemical Composition and Nutritive Value", and "Trees and Shrubs Toxic to Live stock." Use of trees and shrubs by deer and moose is indicated.

ZEHNGRAFF, PAUL J. Aspen as a forest crop in the Lake States. Journal of Forestry 47(7): 555-565, illus. July 1949.

Aspen reproduces well from wind-blown seed when a good seedbed is available and moisture is adequate. Clear cutting of the type usually results in good reproduction from suckers if the cuttings are made between October and April.--N. W. Hosley.

VEGETATION--GRASSLAND
(See also VEGETATION--FOREST, Chapline & Whyte)

EGLER, FRANK E. Herbicide effects in Connecticut vegetation, 1948. Ecology 30(2): 248-256, illus. April 1949.

This is the third report on herbicide studies at Aton Forest, northwestern Connecticut. It presents data on the effects of 2,4-D and 2,4,5-T on 116 species. Several types of painting and spraying were used. Only grasses and common juniper showed no reaction whatever. Unwanted plants can be effectively controlled. The author presents detailed conclusions and recommendations regarding the most effective times and methods of application.

VEGETATION--GRASSLAND--Continued

ELLISON, LINCOLN. Establishment of vegetation on depleted subalpine range as influenced by microenvironment. Ecological Monographs 19(2): 95-121, illus. April 1949.

This study is concerned with plant communities of the Wasatch Plateau in central Utah in which much of the original herbaceous vegetation has been destroyed by overgrazing. Soil bare of perennial vegetation tends to stay that way; while surfaces covered with dense rhizomatous vegetation, particularly Penstemon rydbergii, afford the best sites for the invasion of other species. Observations and experiments indicate that soil instability and inadequate moisture at and near the soil surface prevent the establishment of new plants in openings. Regulation of grazing is the key to restoration of vegetation.

HUMPHREY, R. R. An analysis of forage utilization methods and a proposal for utilization surveys by range condition classes. Journal of Forestry 47(7): 549-554. July 1949.

The method used is non-mathematical and is based on a formula of plant composition as represented by one symbol, a proper use factor and current utilization.--N. W. Hosley.

WARD, HENRY S., JR. Reactions of adapted legumes and grasses on the structural condition of eroded Lindley-Weller soils in southeastern Iowa. Ecological Monographs 19(2): 145-171, illus. April 1949.

"Five species of grasses and four species of legumes, planted in randomized replications on five southeastern Iowa sites representing three distinctive soil types and five treatments, were tested in 1941 for their formative effects on soil structure at the end of three growing seasons following establishment." Lotus corniculatus and Andropogon furcatus caused the greatest improvement in soil structure in the first 3 years. Lotus, Panicum virgatum, and Lespedeza sericea were outstanding at the end of 8 years. However, 8 years was not enough to restore the structural condition of the eroded soils to that of the soils of oak-hickory forest.

VEGETATION--WILDLIFE PLANTS

ANONYMOUS. What about the multiflora rose? Oregon State Game Commission Bulletin 4(3): 1,7-8, illus. March 1949.

An account of its general uses and culture and of the demonstration plantings in Oregon west of the Cascades.

SCHMALL, EUGENE E. Food for wildlife. 16 pages, illus. The North Carolina Wildlife Resources Commission, Game Division, Bulletin No. 1. 1949?

North Carolina needs plants that will provide abundant food and cover throughout late winter. They must be cheaply maintained and must have additional value to the landowner. The Commission is distributing 3 such plants: bicolor lespedeza, sericea lespedeza, and multiflora rose. This bulletin describes each and tells how to plant, maintain, and use it.

VEGETATION--DESERT

BILLINGS, W. D. The shadscale vegetation zone of Nevada and eastern California in relation to climate and soils. The American Midland Naturalist 42(1): 87-109, illus. July 1949.

A map shows the distribution of this extensive zone; photos show something of its character. It lies between the sagebrush zone and the creosote bush zone and has characteristic plants and soils.

VEGETATION--AQUATIC
(See also BIRDS--WATERFOWL, Gist; WATER, Hoyle)

CAPEN, RUTH G. and LeCLERC, J. A. Wild rice and its chemical composition. Journal of Agricultural Research 77(3): 65-79. August 1, 1948.

Comparative analyses are given of unparched and parched wild rice, other cereals, buckwheat, and soybeans. There is a list of 27 references.

EICHER, GEORGE J., JR. Localized weed control in management of game fish. Transactions of the American Fisheries Society 76(year 1946): 177-182. 1949.

The author recommends chlorinated hydrocarbons (particularly ortho-dichlorbenzene) for the control of aquatic vegetation in localized areas. They are effective for a few months to 3 years.

HARTMAN, GEORGE F. Management of central Wisconsin flowages. Wisconsin Conservation Bulletin 14(4): 19-22. April 1949.

Production of duck-food plants and production of fish are favored by summer draw-downs in these shallow artificial ponds that have poor soils.

HOGAN, JOE. The control of aquatic plants with fertilizers in rearing ponds at the Lonoke Hatchery, Arkansas. Transactions of the American Fisheries Society 76(year 1946): 183-189. 1949.

Many aquatic species can be kept from growing by using commercial fertilizers. They should be applied before mid-June to avoid lowering free oxygen needed by fish. Ponds should be treated individually with the exact amounts needed.

HOVIND, RALPH B. Controlled burning on public hunting grounds. Wisconsin Conservation Bulletin 14(4): 13-15. April 1949.

The author tells how fire is being used to improve Horicon Marsh, Wisconsin by: (1) retarding the filling of the basin with grass and sedge debris, (2) creating potholes, (3) stimulating new growth, (4) developing feeding and resting areas for geese, (5) controlling willows and alders, (6) breaking up monotypic vegetation, (7) reducing the likelihood of accidental burns.

VEGETATION--AQUATIC--Continued

WEEKS, BILL and BISSLAND, HOWARD R. Florida's stricken waters. Florida Wildlife 2(11): 3-5,15,18, illus. April 1949; and 2(12): 9-11,19, illus. May 1949.

One-tenth of Florida's 2½ million acres of fresh water is damaged or ruined by water hyacinth. The tabulated results of an aerial survey by the Army Engineers show that water hyacinth occurs on 62,000 acres in 55 counties. The authors discuss its effects on navigation, the hunting and fishing business, fish spawning, fish mortality, waterfowl, use of seaplanes, drainage, mosquito breeding, and resorts. Everyone studying it agrees that only a statewide control program will succeed, and then only after several years of concentrated work. 2-4-D appears to be useful in killing it.

LAND & SOILS

FLINT, RICHARD FOSTER, Glacial geology and the Pleistocene epoch. 589 pages, illus. John Wiley & Sons, Inc., New York. 1947. $6.00.

Background for an understanding of topography, soils, and plant and animal distribution over a large part of North America.

JOFFE, JACOB S. Pedology. 2nd edition. 662 pages, illus. Pedology Publications, New Brunswick, N. J. 1949.

This book aims to be a balanced ".....elucidation of the natural laws governing the origin, formation, and distribution of soils." It is not a treatise on soil productivity. Part I discusses soil, weathering, soil formation, and soil organic matter. Part II describes the types of soil that result from differences in climate. Part III describes the types of soil that result mainly from characteristics of the water table and of parent material.

WATER
(See also MOLLUSKS, Baughman)

MORGAN, MURRAY. The Columbia, powerhouse of the West. 295 pages, illus. Superior Publishing Co., 2603 Third Avenue, Seattle 1, Wash. 1949. $3.50.

This is a collection of interesting information on geography, Indians, forests, floods, atomic energy, salmon, irrigation, waterpower, and all the other things that have affected and are affecting life in the Columbia Basin.

MOYLE, JOHN B. Some indices of lake productivity. Transactions of the American Fisheries Society 76(year 1946): 322-334. 1949.

"In Minnesota waters total alkalinity and total phosphorus appear to be the most valuable indices." ".....sulphates are of most value in considering waterfowl areas;....." ".....the distribution and abundance of larger aquatic plants are of greatest value when related to waterfowl management."

SCHOENFELD, CLAY. Good-by pot-holes. Field & Stream 53(12): 35-37, 150-153, illus. April 1949.

Extensive pot-hole drainage in northeastern South Dakota and southeastern North Dakota is destroying much duck-nesting territory. The author gives many facts and opinions on drainage in Day Co., South Dakota.

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